GETTING STARTED GUIDE

Issue J July 2010

ISO 9002
Reg No. FM38792

pickering

www.pickeringtest.com

HARDWARE SET-UP

Before you begin, take a moment to check your box contents to ensure you have the necessary components present. Contact your local sales office if you find that any part or component is missing.

Your box will contain:

1) An LXI device

2) This document entitled ‘Getting started with your LXI device’.

3) Two 2 metre ethernet patch leads:
One labelled ‘crossover’ (grey) and the other ‘straight-through’ (blue)

4) A power lead for your territory

5) A driver CD

If you have purchased a 60-100, You may also have a number of additional cards. Check your shipping invoice for details.

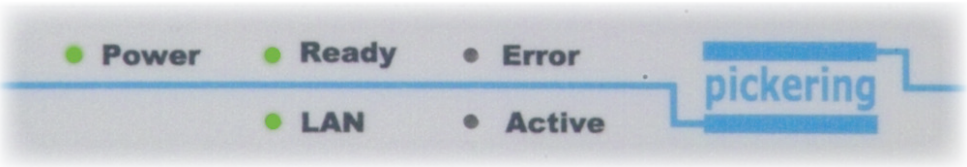
Remove your LXI device from its protective packaging.

If the device is an LXI Modular Switching chassis, insert your option cards into it now. You may need to remove blanking panels to fit your cards. Retain these panels, as the chassis will not be cooled correctly with a card removed if these are not fitted.

If you are using an ethernet hub or switch, use the Ethernet cable marked ‘straight-through’. Connect one end to the socket on the back of your LXI device, and the other to a free socket on your hub or switch. If you are connecting directly from your computer to the LXI device, use the Ethernet lead marked ‘crossover’. If you are connecting directly using a laptop equipped with both wired and wireless Ethernet ports, disable the wireless port.

Insert the power lead into the socket on the back of your device and plug the other end into a mains electricity socket. You can now power up the device using the switch on the rear panel next to the mains inlet.

Your device will now start going through its boot up procedure which can take up to 40 seconds to complete. A green ready light should illuminate along with a green LAN light and a green power light if everything has worked correctly. If not check your Ethernet connection. If you have an error light proceed to the troubleshooting section of this guide for further assistance.



CONNECTING YOUR LXI INSTRUMENT

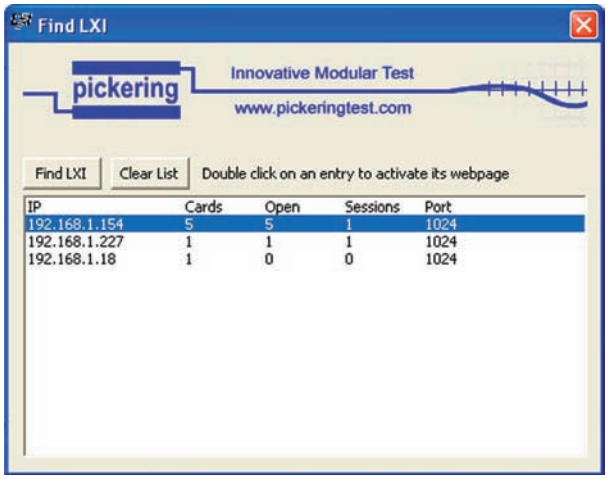
Control of the LXI device is through a web server at the devices IP address. From the web server the user can also access drivers, utility programs and documentation. So, it is important to first establish the IP address that your LXI device is using.

By default, Pickering LXI devices are configured using DHCP to acquire a TCP/IP address. By matching the MAC address listed on the rear of the unit, with the lease log on your DHCP server, you can determine your LXI devices address and proceed to configuring your LXI devices settings.

If you do not have a DHCP server, you must ensure that your computer is set to use Auto-IP as its TCP/IP configuration method. This is the default fallback condition under Windows XP if you set your computer for DHCP and it cannot locate a server.

You can then establish your LXI devices TCP/IP address using one of three Discovery Tools.

The Pickering Discovery tools located on the CD included in your box can tell you the TCP/IP address your device is using. To use the CD, insert it into you computer's drive and wait for it to auto-run. On the first screen select *LXI PRODUCTS*.



1) Find LXI – a simple Windows application which will list all Pickering LXI devices. The home page of an LXI device is displayed when the corresponding IP address is highlighted and *Open Browser* selected.

2) VXI-11 Discovery protocol.
Some tools, for example Agilent IO Library, provide a VXI-11 protocol discovery tool. This may be used to establish the address of any connected LXI compliant device.
A VXI-11 Discovery browser is supplied on the distribution CD and may be used to locate any LXI device, Pickering or otherwise. To run this, select the *VXI-11 Discovery* application.

3) Bonjour or Rendezvous discovery protocol

By default, Pickering LXI devices have the Bonjour or Rendezvous service switched on, by using a suitable Bonjour client on your computer, you can search for and configure an LXI device without knowing its TCP/IP address beforehand. Use the MAC address on the rear of the device and that present on the LXI devices homepage to confirm you are configuring the correct device if you have more than one LXI device running.

A Rendezvous browser is shipped on the CD, to use it click on the Rendezvous icon.

Then click on *Web Server (HTTP)*.

A list of devices and MAC addresses should be displayed. Double click on the device with the same model number and MAC address as the unit you want to use (the MAC address is printed on the unit next to the LAN socket).

The IP address of the device will be displayed in the browser's address field in the format:

http://169.254.59.99/path=/

delete the /path=/ section of the address and press Return to display the Instrument Home Page.

All the discovery tools are located on the Pickering distribution CD in the LXI Products/Tools directory.

Once you have a valid IP address, you can move on to configuring your LXI devices settings

CONFIGURING YOUR LXI DEVICES SETTINGS

As you now know your devices TCP/IP address, you can proceed to configure the device to your requirements.

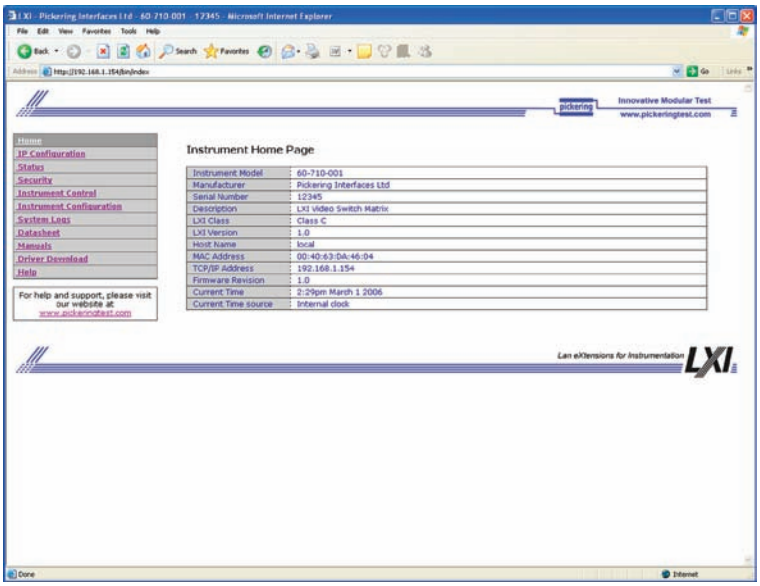
Type your devices IP address into the address bar of your web browser in this format:

http://<IPNUM>

Replacing <IPNUM> with the address your LXI device is currently using.
I.e. if your LXI device has been issued an address of 192.168.1.50, then type the following into your browser address bar:

http://192.168.1.50

You will now be presented with your LXI devices embedded homepage. This page lists the devices settings, LXI class and model number. Use the MAC address listed on this page and that on the rear of your device to confirm you are configuring the correct device if you have more than one.



Clicking on IP Config will take you through to the main configuration screen for your device. It is here that you can set the method the device uses for acquiring a TCP/IP address.

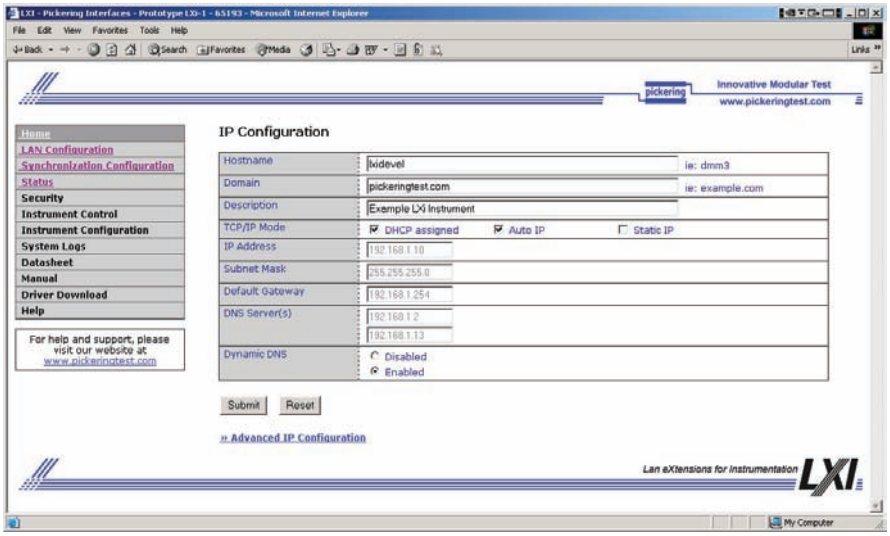
There are three main ways of configuring your LXI devices TCP/IP address:

1) DHCP, a server issues IP addresses from a pool and ensures that no two devices can have the same IP address.

2) Where no DHCP server exists, Auto-IP negotiates with other devices to choose an IP address that does not conflict. This is the default condition a Windows based computer reverts to if it is configured for DHCP but there is no DHCP server present.

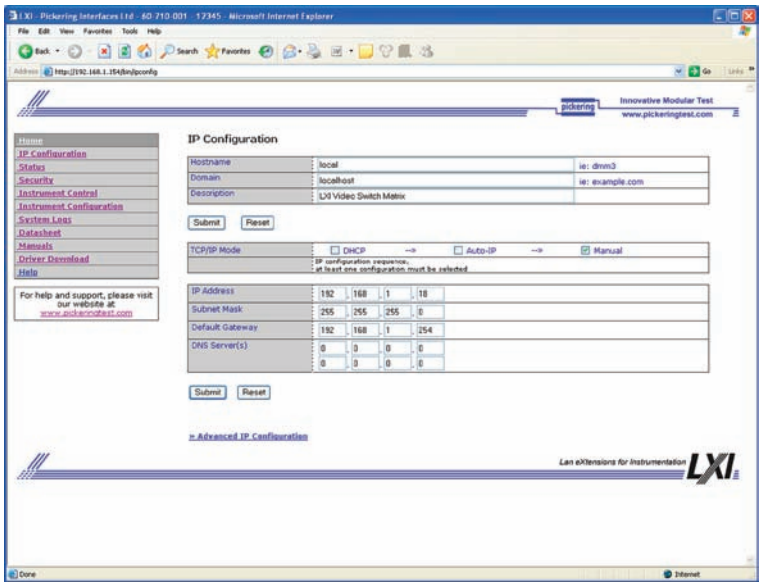
3) Static IP, address settings are manually entered and care must be taken to ensure that the settings chosen do not conflict with other devices present on the network.

4) Contact your network administrator if you are unsure as what these settings should be.



More than one addressing scheme may be enabled if required. By default Pickering LXI devices ship with DHCP and Auto-IP enabled. If the LXI device fails to acquire a TCP/IP address by using DHCP, it reverts to using Auto-IP. This fail over process is designed to ensure you can still communicate with your device in the event of a server failure.

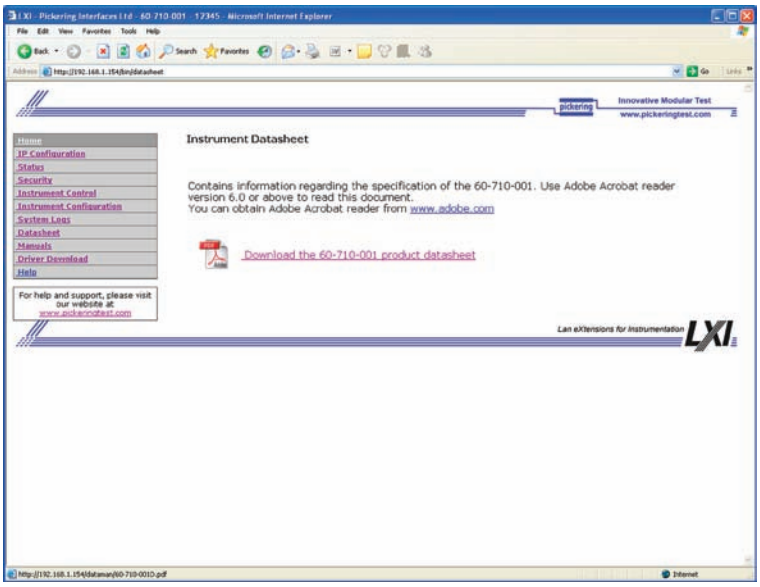
Note that at least one configuration method must be enabled at all times.



WHERE TO GO FROM HERE

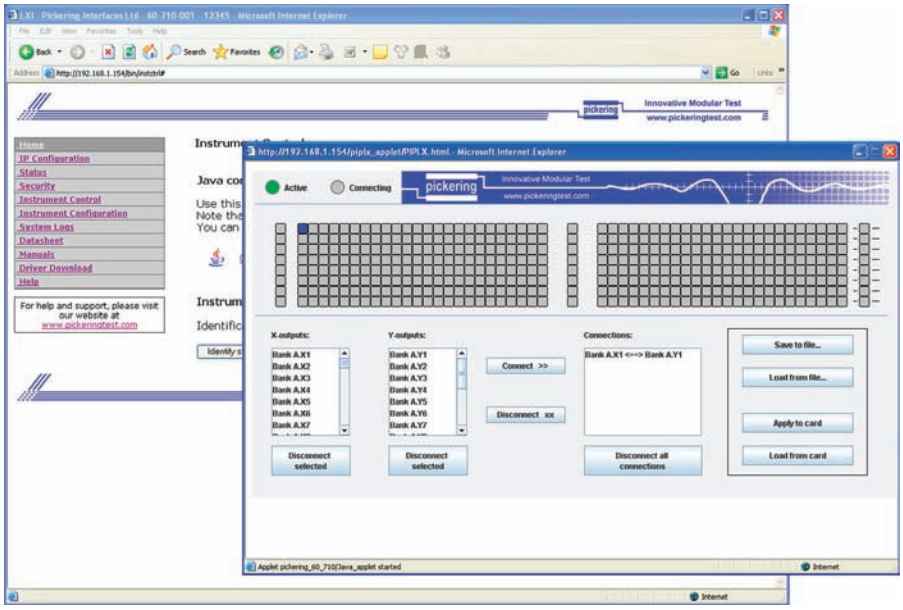
If you have successfully configured a TCP/IP address for your LXI device, you can use the resources built in to your device to do useful work:

Drivers, manuals and datasheets are provided in the devices memory and can be downloaded and viewed at any time. You must have Adobe Acrobat Reader installed to view the embedded documents.



Some LXI devices also have the ability to be controlled from the web using Java Applets. You must have the Java Runtime environment loaded from Sun Microsystems to use this facility. This application can be downloaded from www.sun.com/java (if applicable, you may need to re-enable your wireless network connection to dowload this).

From the Instrument Home Page select *Instrument Control* then click the relevant icon in the displayed window to launch the Java applet.



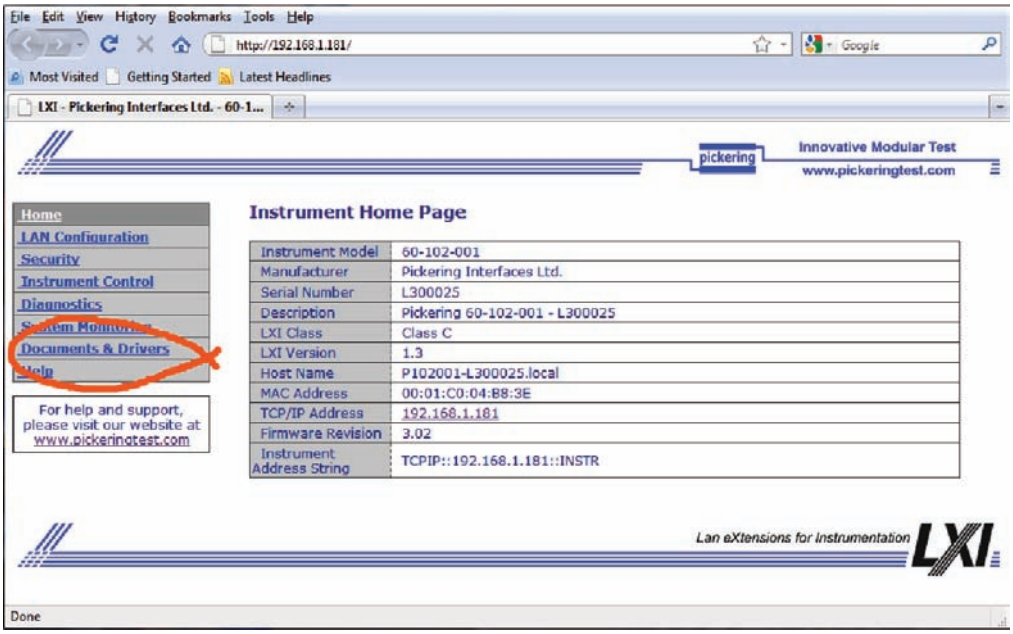
You driver CD contains other useful applications. A programming guide and example programs get installed on your computer when you install the driver for the LXI product.

INSTALLING DRIVER SOFTWARE

Drivers for the LXI device are accessible from any one of 3 locations:

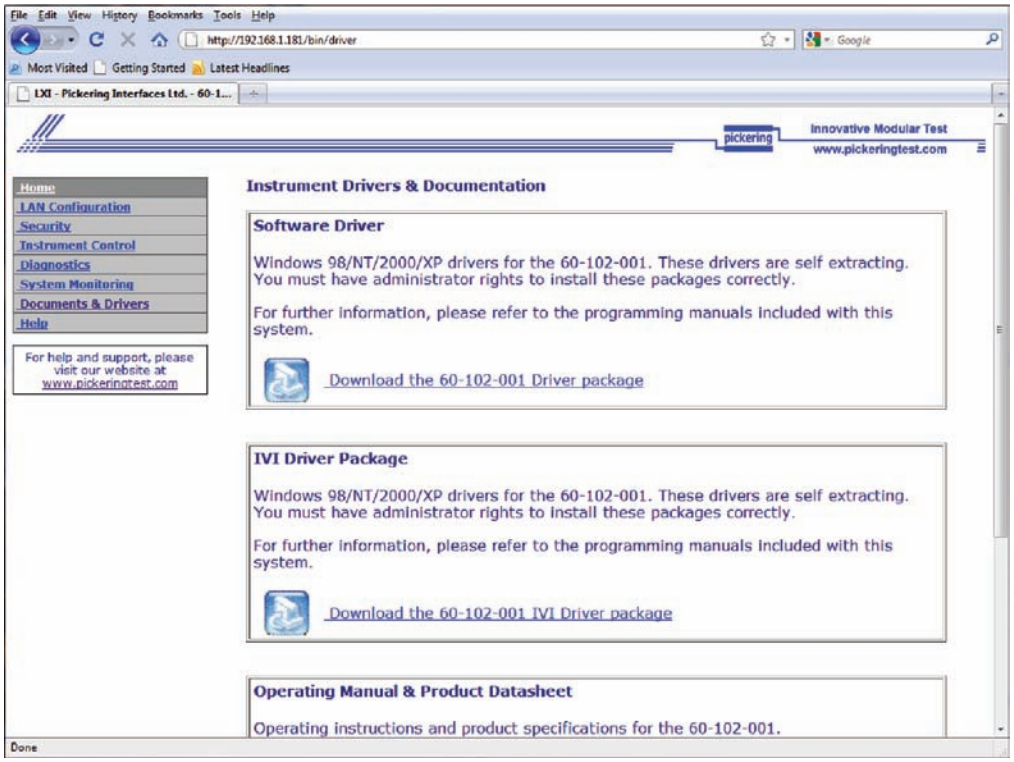
1) The LXI product's web pages.
2) The distribution disk delivered with the product.
3) The Pickering Interfaces' website

From the LXI product's web pages:



The base driver (C-interface dll) is provided in the Software Driver package, this must always be installed.

An IVI driver is also provided which may be installed if required, this required prior installation of NI-VISA and the NI-ICP IVI package.



From the distribution disk:

The base driver may be found in the folder:

Drivers_LXI

The IVI driver is in the folder:

Drivers_IVI

From The Pickering Interfaces Website:

Open the ‘Support’ link from the menu and select ‘Drivers and Software’.

The base driver can be found at the following location:

http://www.pickeringtest.info/downloads/drivers/Sys60

Select the latest ClientBridge package.

The IVI driver from the ‘System 40/45/50 PXI/PCI Products’ page:

http://www.pickeringtest.info/downloads/drivers/IVI/

CONFIGURING THE LXI DEVICE ISOLATED FROM A NETWORK

In some instances it may be preferable to configure a Pickering LXI device whilst isolated from the rest of a network. For example using a laptop. This section of the document instructs a user on how to use the cross-over LAN cable provided with your device to perform basic configuration and testing separate from your main network.

Preliminaries

- It is assumed that you device is in default factory configuration. If this is not the case or you are unsure, using a paperclip or sharp object inserted in the reset aperture, hold the reset button down for a minimum of five seconds.
- Obtain the Bonjour client for your system from www.apple.com or install the web browser plug-in located on the installation CD supplied with your LXI device. The installation program can be located in the folder:

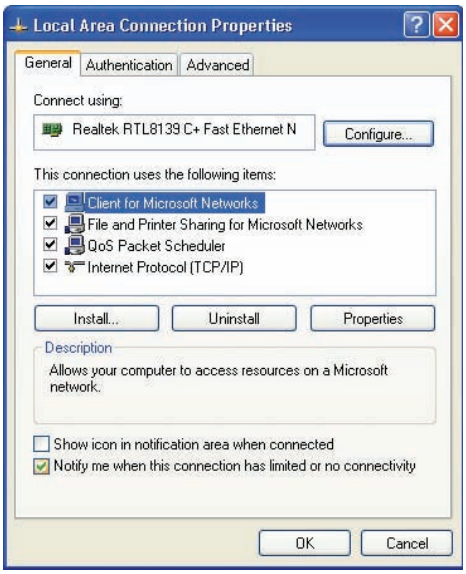
  X:\LXI Products\Tools (Where X is the drive letter of your CD-Rom drive)
- If you are using a laptop equipped with both wired and wireless Ethernet ports, disable the wireless port as this has been known to cause conflicts with the configuration process on some machines.
- Firewalls can interfere with communication to the LXI device. Turn off any firewall running in Windows and disable any other anti-virus software on your computer.

Windows XP/2000

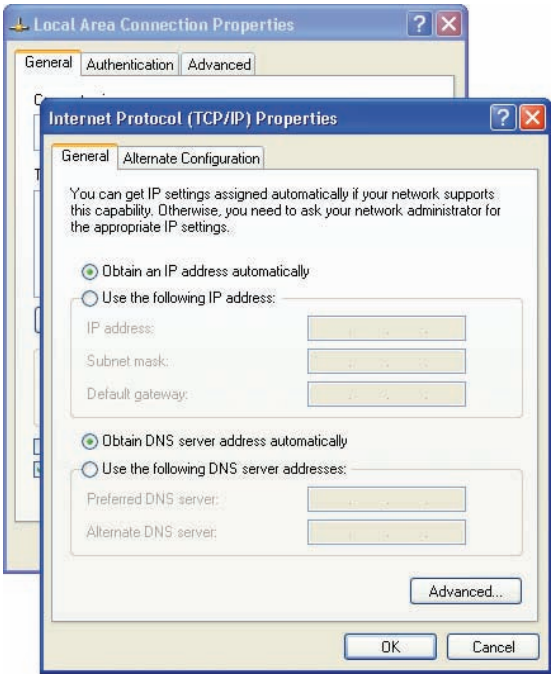
1) Plug in the cross-over network lead supplied with your LXI device into an Ethernet port on the computer, and into the back of the LXI box. At this point, ensure the LXI device is powered down.

2) Click on Start, Settings and then Network Connections. Highlight the network connection you plugged the cross over cable into, And then click on File and then Properties from the drop down menu.

The following should appear on your screen:



3) Highlight Internet Protocol (TCP/IP) and click on Properties. Make sure that 'Obtain an IP address automatically' and 'Obtain DNS server address automatically' are selected.



4) At this point click OK twice to bring you back to the Network Connections control panel. You may close this panel if you wish.

You should now power up your LXI device. It may take up to a minute for the device to boot, you should wait at least this amount of time before proceeding.

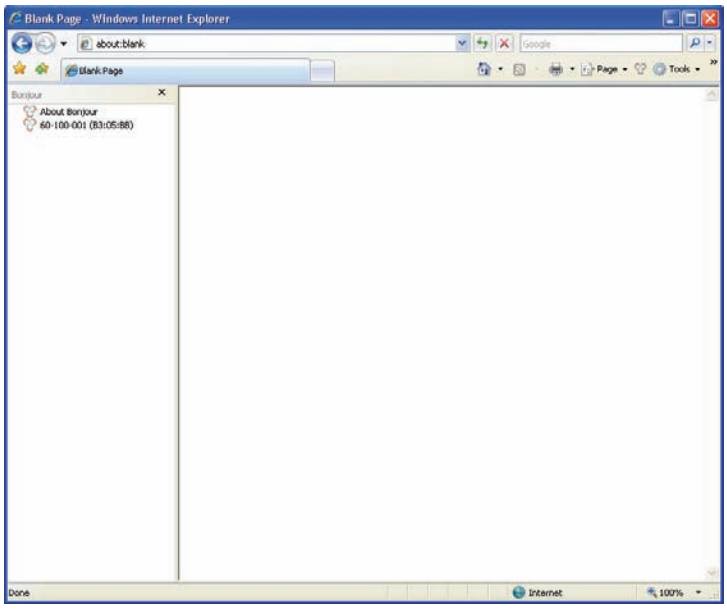
5) Whilst your LXI device is powering up, you computer will be attempting to receive and IP address from it. You may see something like this at the bottom of your screen, A small animated yellow dot moving around over your selected network connection:

After a period of time you will see something similar to this:

When you receive this message you are ready to proceed to the next step.

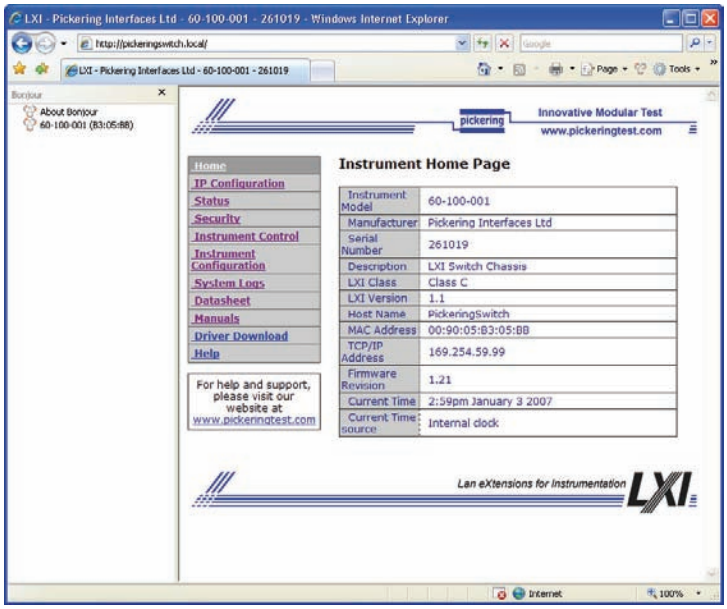
6) Start up your web browser. In this example we are using Internet Explorer 7.0

Click on the bonjour icon if the at the top right of your screen if the Bonjour discovery panel is not present on the left.



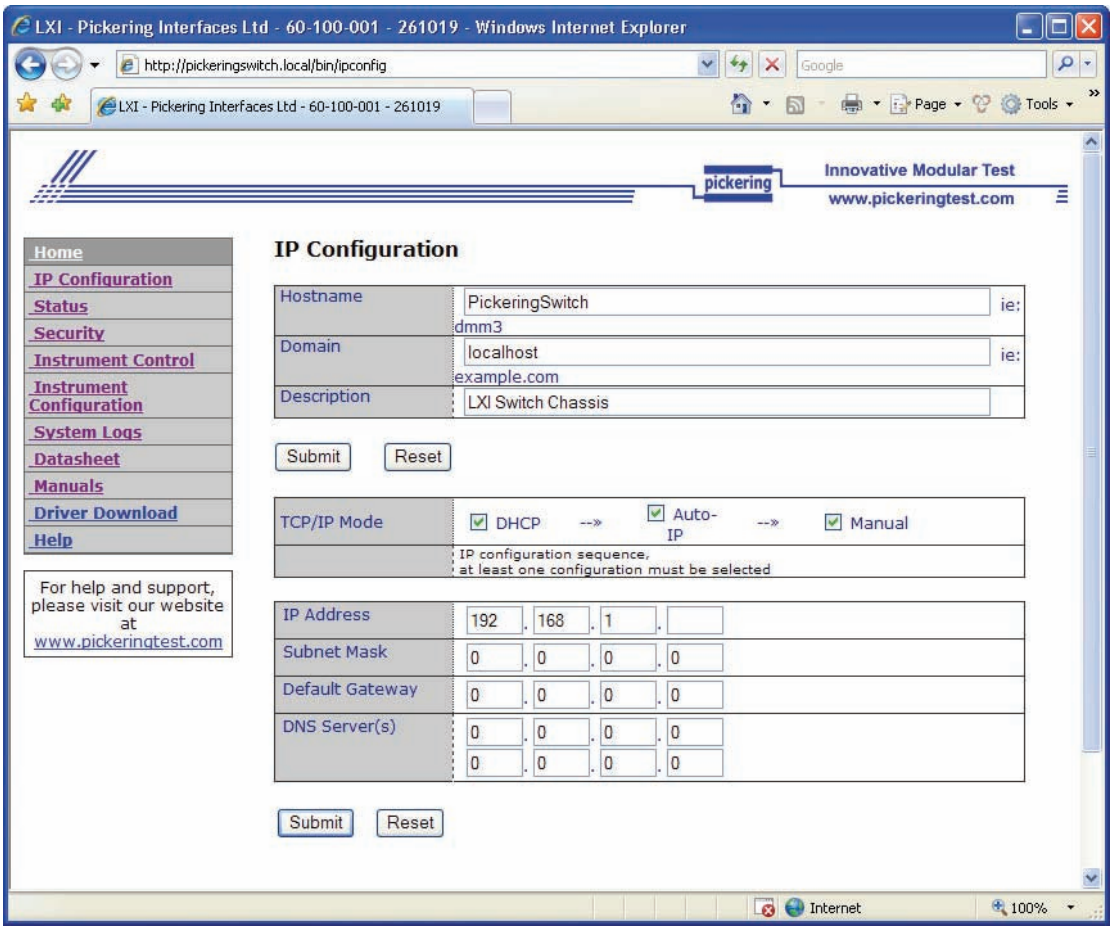
Listed on the left should be a list of devices this computer has detected. Pickering LXI devices are identified by the model number followed by the last six digits of the LXI devices MAC address. You can find the MAC address of your device by checking its rear panel data label where it will be clearly displayed.

7) Double click on the model number of the device and in the right hand pane of your browser window you should see the devices welcome screen.



At this point you can now proceed to the Instrument control link on the devices homepage or set an IP address to use the device in a larger network.

8) If you want to configure your LXI device for use in a larger network, click on the IP Configuration link provided on the device homepage. You will be presented with a page requesting these details:



If you do not know what options or IP configuration is required, it is strongly recommended you contact your IT support for help with configuring these options.

APPENDIX

System Specification For Network Administrators:

System base: 2.6.18 Linux kernel read only file system
Services:

Apache 2	Port 80 only
VXI-11	RPC
Bonjour	Multicast DNS
ServerBridge	Multicast DNS

Unit supports network configuration:
- DHCP
- AutoIP (link-local addressing)
- Static IP

IPv4 only
Non-MDIX Ethernet port, speed selectable 10/100 mbps, full or half duplex

Remote administration consoles: http only, no telnet or SSH server
Java control panel for attached hardware.

Protocols supported:
- Pickering proprietary communication protocol
- http
- SOAP & SNMP (selected models only)

Security:
- htaccess security for configuration control
- Physical storage media inside device holding configuration and OS.

TROUBLESHOOTING

Q I have a power light and a ready light, but the LAN light just flashes.

A You have an IP conflict. That is another device on your network has the same TCP/IP address as your LXI device. Remove the conflict or change the IP address of your LXI device.

Q The LAN light does not light up at all.

A There is a cabling fault. Check your Ethernet lead is of the correct type and is plugged into a working hub or switch. Most hubs and switches have a link indicator to show when the connection is correct.

Q I have a red error light, but the ready and power lights are on.

A Most likely cause is in LXI Chassis devices, where the peripheral cards have not been installed. Power down your LXI device and install some cards.

Q I have only a red error and power light on.

A There is a hardware fault with your device, contact your local sales office.

Q How do I know when I can begin communicating with my device.

A The LXI devices have a ready and active light that indicate its current activity. Whenever the active light is illuminated, the system is busy and may not be able to process other commands. This will normally occur when a TCP/IP configuration change has occurred.

Q My LXI device's lights are all on, or flash wildly.

A The system is booting up, these sequences are used to monitor the LXI devices boot progress as an aid to fault finding. Until the devices Ready light is illuminated green, you should not attempt to communicate with the device.

Q All of my devices lights are on, and I never see a Green ready light even after a few minutes.

A Your device has a fault, contact your local sales office.

Please contact your local Pickering Interfaces sales office for any further support or email:

support@pickeringtest.com

You can also visit our website for product updates, help and downloadable materials at:

http://www.pickeringtest.com

Worldwide Technical Support and Product Information

http://www.pickeringtest.com

Pickering Interfaces Headquarters

Stephenson Road Clacton-on-Sea CO15 4NL United Kingdom
Tel: +44 (0)1255-687900
Fax: +44 (0)1255-475058
E-Mail: sales@pickeringtest.com

Pickering Interfaces Inc.
2900 Northwest Vine Street
Grants Pass
Oregon 97526
USA

Tel: +1 541 471 0700
Fax: +1 541 471 8828
E-Mail: ussales@pickeringtest.com

Pickering Interfaces GmbH
Johann-Karg-Straße 30
D-85540
Haar-Salmdorf
Germany

Tel: +49 89 125 953 160
Fax: +49 89 125 953 189
E-Mail: desales@pickeringtest.com

Pickering Interfaces AB
Karl Nordströmsväg 31
432 53
Varberg
Sweden

Tel: +46 340-69 06 69
Fax: +46 340-69 06 68
E-Mail: ndsales@pickeringtest.com

Pickering Interfaces Inc.
(East Coast Regional Office)
12 Alfred Street Suite 300-3
Woburn Massachusetts 01801
USA

Tel: +1 781 897 1710
Fax: +1 781 897 1701
E-mail: useastsales@pickeringtest.com

Pickering Interfaces s.r.o.
Smetanova 525
Třinec
739 61
Czech Republic

Tel: +42 0558 339 168
Fax: +42 0558 340 888
E-mail: cesales@pickeringtest.com

Pickering Interfaces SARL
6 Rue De La Mare Blanche
77186 Noisiel
Marne Le Vallee
France

Tel +33 1 60 53 55 50
Fax +33 1 60 53 55 99
email frsales@pickeringtest.com

© COPYRIGHT (2010) PICKERING INTERFACES. ALL RIGHTS RESERVED.

No part of this publication may be reproduced, transmitted, transcribed, translated or stored in any form, or by any means without the written permission of Pickering Interfaces.

Technical details contained within this publication are subject to change without notice.

LXI SNMP QUICK START GUIDE

Before starting, ensure you have installed the LXI device and its Pickering cards and made a note of the TCPIP address allocated to it (see the “LXI Getting Started” acrobat document in the LXI Products folder of the distribution disk). Use a suitable network discovery and management tool to view and control the LXI device. In our examples we will use “NetworkView” found at www.networkview.com.

NOTE: There is no need to install the Pickering drivers when SNMP is the only method being used to control the LXI device.

Using SNMP to control a Pickering card

A MIB suitable for controlling multiplexer (MUX) cards in a Pickering LXI chassis can be found in the \LXI Products\ SNMP folder of the distribution disk.

The data structure contained in this MIB is explained as follows:

The SNMP hierarchical address for Pickering Interfaces is: 1.3.6.1.4.1.18371 or symbolic .iso.org.dod.internet. private.enterprises.pickering. This is followed by data representing Products, Series number and Item number where:

Products is always 1.

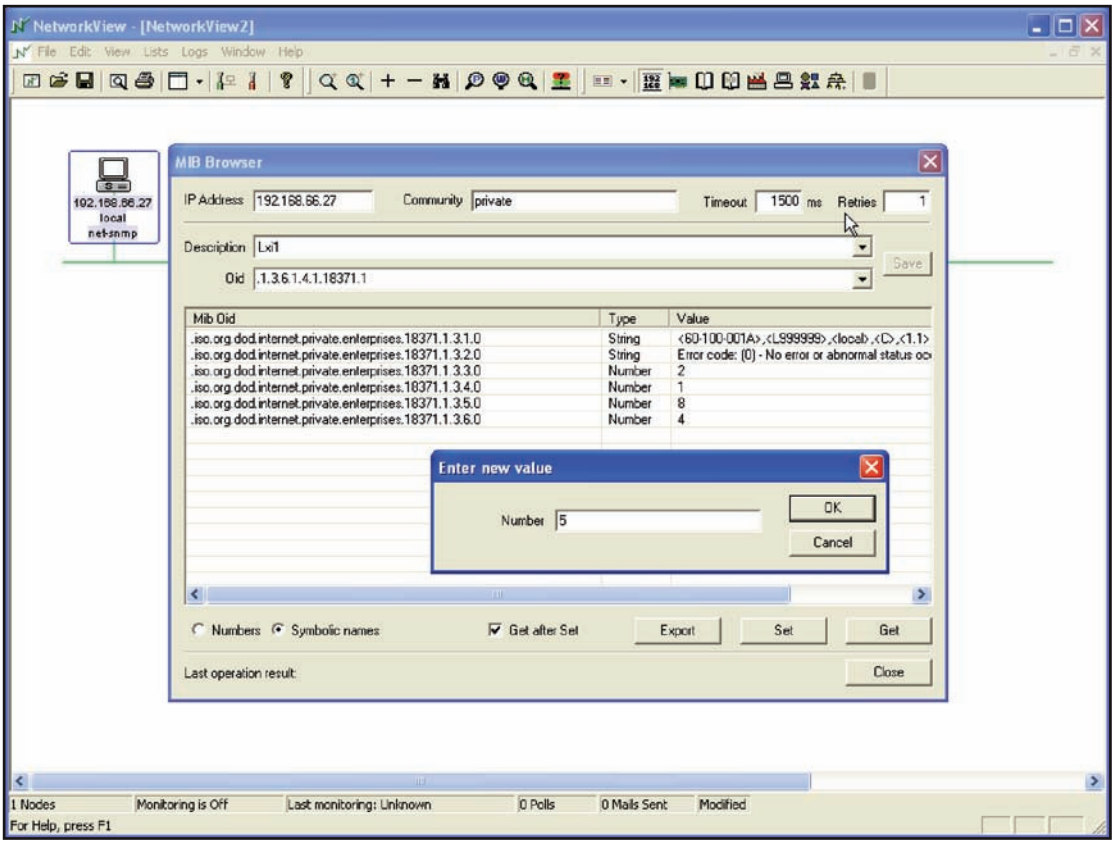
Series number identifies a specific card range. System 40 cards are allocated a value of 3.

Item number describes the information which can be read or set for a specific card range. The System 40 series is defined as follows:

Item	Name	Description	Access
1	Description	Description of the card	Read-only
2	Status	Error status of the card	Read-only
3	Sub Unit Count	Total sub-units on the card	Read-only
4	Sub Unit	Currently selected sub unit, use this to select a sub unit, values between 1 and “Sub Unit Count” inclusive are valid.	Read-write
5	Channel Count	Total channels on the currently selected sub unit.	Read-only
6	Channel	Current channel value within the sub unit, values between 1 and “Channel Count” inclusive are valid.	Read-write

For example the full OID of the channel number on a 40 series card would be 1.3.6.1.4.1.18371.1.3.6.

Below is an example (using NetworkView) where a channel value of 4 is about to be changed to 5 on sub unit 1 of a system 40 (40-874-002) dual output single channel mux card in an LXI at IP address 192.168.66.27.



Please note, since the 40-874-002 is used in our example, and to avoid confusion, two important aspects (imposed by the hardware) of this card are worth noting:

1. One channel per sub unit is always selected.

2. The default channel selections are 4 on sub unit 1 and 5 on sub unit 2.

© COPYRIGHT (2010) PICKERING INTERFACES. ALL RIGHTS RESERVED.

No part of this publication may be reproduced, transmitted, transcribed, translated or stored in any form, or by any means without the written permission of Pickering Interfaces.

Technical details contained within this publication are subject to change without notice.